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(71)Applicant : JAPAN STEEL WORKS LTD:THE

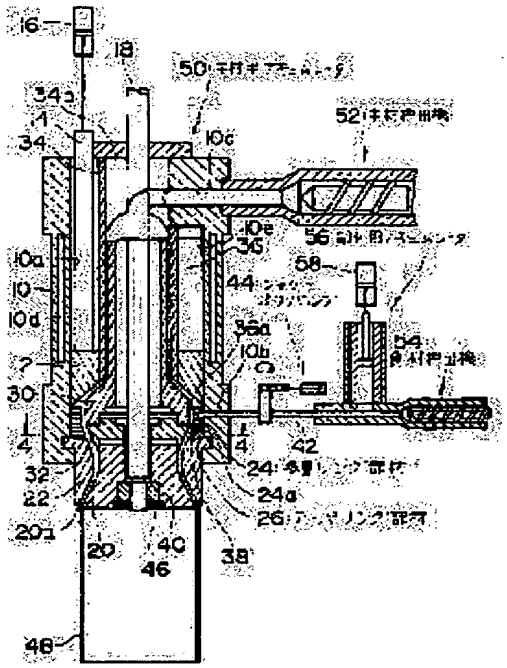
(72)Inventor : ONO YOSHITAKA

(54) EXTRUSION MOLDING METHOD AND DEVICE FOR MULTI-LAYER PARISON

(57)Abstract:

PURPOSE: To enable extrusion molding of a multi-layer parison with less number of layers partially.

CONSTITUTION: A sub-material resin layer in the molten state formed concentrically with a first ring hole and extruded out of a second hole of partially ring shape with a part of ring embedded is laminated on a main material resin layer of molten state extruded out of the first ring hole, and the main material resin is filled in a cylindrical space of partially cylindrical shape in which the sub-material resin is in existence while said laminate is moved in resin passages 10b and 10c toward a die slit, and then the whole of the material is extruded as a multi-layer parison 40 out of the die slit 20a.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The secondary-member resin layer of the melting condition extruded from the 1st hole and the 2nd hole of the shape of a subring of this alignment by the principal member resin layer of the melting condition extruded from the 1st annular hole Superposition, The extrusion-molding approach of the multilayer parison characterized by filling up with principal member resin the partial cylindrical space section in which secondary-member resin does not exist this while moving the inside of a resin path toward a die slit, and then extruding these from a die slit.
[Claim 2] The rod arranged possible [axial directional movement] in the core of a cylinder (10) and a cylinder (10) (18), The core die (20) connected with this, and the ring arranged at the periphery side of this (22), It has the multilayer ring (24 26) arranged in a cylinder (10). Between a ring (22) and a core die (20) The annular die slit (20a) is formed and the principal member resin path (36) is formed in the inner circumference side of a multilayer ring (24 26). The principal member extruder which the secondary-member resin path (38) is formed in the multilayer ring (24 26), and extrudes principal member resin to a principal member resin path (36) (52), In the extrusion-molding equipment of the multilayer parison which has the secondary-member extruder (54) which extrudes secondary-member resin to a die slit (20a) through a secondary-member resin path (38) The above-mentioned multilayer ring (24 26) is extrusion-molding equipment of the multilayer parison characterized by forming the above-mentioned secondary-member resin path (38) of a multilayer ring (24 26) in the shape of a subring while being inserted in the above-mentioned cylinder (10).
[Claim 3] The ring member which the above-mentioned multilayer ring (24 26) adjoined the multilayer ring member (24) at this, and has been arranged (26), It is constituted. since -- to a multilayer ring member (24) or a ring member (26) Extrusion-molding equipment of multilayer parison according to claim 2 with which the path section (26a) of the shape of phase hand part material and a subring which is not stuck is formed in the phase hand part material of this, and the field which counters, and the above-mentioned secondary-member resin path (38) is constituted by both members (24 26).
[Claim 4] Extrusion-molding equipment of multilayer parison according to claim 3 with which the resin cutoff member (28) which prevents that secondary-member resin flows into the bore side location of this at a principal member resin side is prepared in the member (26) in which the subring path section (26a) of the above was formed.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the extrusion-molding approach of multilayer parison, and equipment.
[0002]
[Description of the Prior Art] As extrusion-molding equipment of the conventional multilayer parison, there is a thing as shown in JP,62-104707,A. The extrusion-molding equipment of multilayer parison shown in this The annular 1st resin path where the principal member resin which forms the inside-and-outside layer of parison circulates, The principal member extruder which supplies principal member resin to the 1st resin path, and the annular 2nd resin path where the barrier resin (secondary-member resin) extruded between the inside-and-outside layers of the above-mentioned principal member resin circulates, The secondary-member extruder which supplies secondary-member resin to the 2nd resin path, and the 1st pressurization means which pressurizes and extrudes the principal member resin in the above-mentioned 1st resin path, It has the source of supply (the 2nd principal member extruder) which supplies principal member resin to the part corresponding to the pinch-off section of the above-mentioned 2nd resin path, and the 2nd pressurization means which pressurizes and extrudes the secondary-member resin and principal member resin in the above-mentioned 2nd resin path. The pinch-off section is formed by inserting the vertical both ends of multilayer parison, and a part of hoop direction into the closing side of a die, and pasting up mutually. Each above-mentioned resin path is formed in the multilayer ring in the shape of a said alignment. In the part corresponding to the pinch-off section of the 2nd resin path where barrier resin circulates Since it is supplied from a source of supply, the secondary-member resin and principal member resin in the 2nd resin path get mixed up with extrusion of the principal member resin in the 1st resin path by the 1st pressurization means and principal member resin is extruded by the 2nd pressurization means The multilayer parison which has the monolayer parison section (monolayer section at the time of two-layer principal member resin piling up in fact, and seeing from a quality-of-the-material side) without secondary-member resin is formed in a part of hoop direction (part corresponding to the pinch-off section in a hoop direction). Thereby, the amount of the secondary-member resin used can be saved.
[0003]
[Problem(s) to be Solved by the Invention] However, besides the principal member extruder for forming the inside-and-outside layer of parison, since another source of supply (the 2nd principal member extruder) which supplies principal member resin to the part corresponding to the pinch-off section of the 2nd resin path is required, there is a trouble that equipment becomes expensive in the above extrusion-molding equipments of the conventional multilayer parison. Furthermore, since it is necessary to extrude to the 2nd resin path so that secondary-member resin may not be mixed with a secondary-member extruder and principal member resin may not be mutually mixed with the 2nd principal member extruder, respectively, there is also a trouble that the activity which adjusts each extrusion pressure, extrusion timing, etc. is troublesome. This invention aims at solving such a technical problem.
[0004]
[Means for Solving the Problem] This invention solves the above-mentioned technical problem by making the secondary-member resin path of a multilayer ring into a subring-like thing. Namely, the extrusion-molding approach of the multilayer parison of this invention The secondary-member resin layer of the

melting condition extruded from the 1st hole and the 2nd hole of the shape of a subring of this alignment by the principal member resin layer of the melting condition extruded from the 1st annular hole Superposition, The partial cylindrical space section in which secondary-member resin does not exist this while moving the inside of a resin path toward a die slit is filled up with principal member resin, and then these are extruded from a die slit. Moreover, the rod with which the equipment which enforces the above-mentioned approach has been arranged possible [axial directional movement] in the core of a cylinder (10) and a cylinder (10) (18), The core die (20) connected with this, and the ring which has been arranged at the periphery side of this and fixed to the cylinder (10) (22), It has the multilayer ring (24 26) arranged in a cylinder (10). Between a ring (22) and a core die (20) The annular die slit (20a) is formed and the principal member resin path (36) is formed in the inner circumference side of a multilayer ring (24 26). The principal member extruder which the secondary-member resin path (38) is formed in the multilayer ring (24 26), and extrudes principal member resin to a principal member resin path (36) (52), It is aimed at what has the secondary-member extruder (54) which extrudes secondary-member resin to a die slit (20a) through a secondary-member resin path (38). The above-mentioned multilayer ring (24 26) While being inserted in the above-mentioned cylinder (10), the above-mentioned secondary-member resin path (38) of a multilayer ring (24 26) is formed in the shape of a subring. The above-mentioned multilayer ring (24 26) In addition, a multilayer ring member (24), It is constituted. the ring member (26) which adjoined this and has been arranged -- since -- to a multilayer ring member (24) or a ring member (26) The path section (26a) of the shape of phase hand part material and a subring which is not stuck is formed in the phase hand part material of this, and the field which counters, and it is good for the above-mentioned secondary-member resin path (38) to be constituted by both members (24 26). Moreover, it is good for the member (26) in which the subring path section (26a) of the above was formed to prepare the resin cutoff member (28) which prevents that secondary-member resin flows into a principal member resin side in the bore side location of this. In addition, the sign in a parenthesis shows the member to which an example corresponds.

[0005]

[Function] To the principal member resin passing through an annular principal member resin path being extruded in the shape of a cylinder, although the melting resin of two or more classes is extruded through each resin path, the secondary-member resin passing through the secondary-member resin path of the shape of a subring of a multilayer ring is extruded in the shape of a partial cylinder, and is put on a principal member resin layer. Therefore, although the partial cylindrical space of the configuration corresponding to a partial cylinder-like secondary-member resin layer is formed in the front face of a principal member resin layer, this partial cylindrical space section will be filled up with the principal member resin which flowed from the adjoining principal member resin path. That is, a part with few superposed layers is formed in multilayer parison. Extrusion molding of the multilayer parison which formed the great portion of parison and formed expensive secondary-member resin only in the required part with cheap principal member resin by this can be carried out. Since a multilayer ring is only put on a cylinder, a multilayer ring is easily exchangeable. When a resin cutoff member is prepared in the member in which the subring-like path section was formed, even if it changes the thickness of the secondary-member resin to the thickness of principal member resin, the boundary of the principal member resin of a circumferencial direction and secondary-member resin can be made it at a distinct thing.

[0006]

[Example] The 1st example of this invention is shown in drawing 1 -5. Resin path 10c and 10d of heat carrier paths formed in cylinder hole 10a penetrated to shaft orientations, resin path 10b formed in the drawing 1 Nakamigi lower part, and the drawing Nakamigi upper part are formed in the cylinder 10, respectively. The upper part in which resin path 10c of a cylinder 10 is formed is fabricated more thickly than other parts. Through the heat carrier inlet port and heat carrier outlet which are not illustrated, to 10d of heat carrier paths of a cylinder 10, circulation supply of a heat carrier is possible, and, thereby, the resin temperature in a cylinder 10 can be uniformly maintained to them. The cylinder part material 34 is arranged in cylinder hole 10a of this at the cylinder 10. The cylinder part material 34 is being fixed to the wall section of the thickness of the cylinder 10 upper part. Thereby, the cylinder part material 34 has divided cylinder hole 10a in the annular hole 10e section and the main hole 34a section of this and this alignment. The ring piston 12 is inserted in shaft orientations movable at annular hole 10e. The accumulator 50 for

principal members is constituted by a cylinder 10, the ring piston 12, the cylinder part material 34, etc. The piston rod of the hydrostatic pressure cylinder 16 is connected with the piston rod 14. The hydrostatic pressure cylinder 16 can drive the ring piston 12 of the accumulator 50 for principal members to the principal member resin direction of extrusion of the method of drawing Nakashita. The rod 18 is formed in shaft orientations movable at main hole 34a of the cylinder part material 34. The thread part is formed in the drawing Nakashita edge of a rod 18. The core die 20 which has a hole with a stage in the thread-part side of this is inserted in a rod 18, and the nut 40 is thrust into the thread part of this. The nut 40 is inserted in the hole with a stage of the core die 20. The snap ring 46 is attached in the snap-ring slot on this at the core die 20. Thereby, the core die 20, the rod 18, and the nut 40 are made one-like. The ring 22 is arranged at the periphery side of the core die 20. The ring 22 is being fixed to the outlet side of a cylinder 10. Annular die slit 20a is formed by the ring 22 and the core die 20, and extrusion of the multilayer parison 48 is possible so that it may mention later from now on. By operating a rod 18, the core die 20 is movable under drawing Nakagami to a ring 22. Thereby, the crevice dimension of die slit 20a, i.e., the thick dimension of parison 48, can be adjusted. The path formation members 30 and 32 are arranged rather than the location where the core die 20 is arranged in the method location of drawing Nakagami. The rod 18 has penetrated the path formation members 30 and 32, respectively. The ring-like multilayer ring member 24 is mostly inserted in a cylinder 10. Circular-cone cylinder part 24a to which a diameter becomes small as for a drawing Nakashita edge is formed in the side suitable for the ring 22 side of the multilayer ring member 24. The tapering member 26 is arranged in the peripheral face of circular-cone cylinder part 24a of the multilayer ring member 24, and the location which counters. The tapering member 26 is inserted in a cylinder 10. The multilayer ring assembly is constituted by the multilayer ring member 24 and the tapering member 26. The attaching position of the shaft orientations of this is positioned by inserting a multilayer ring assembly into the ring piston 12 and a ring 22. As the tapering member 26 is shown in drawing 3 , the die-length dimension of the shaft orientations of the drawing Nakamigi half section of this is formed shorter than the die-length dimension of the shaft orientations of the left half part in drawing. That is, semicircle periphery-like path section (taper surface part) 26a and path cutoff section (taper surface part) 26c made into the ** with a stage to this are formed in the tapering member 26. Although the secondary-member resin path 38 is formed in the semicircle section by the side of drawing 1 Nakamigi when it combines with the multilayer ring member 24 which this shows by the imaginary line in drawing, a secondary-member resin path is formed in the semicircle section of the left-hand side in drawing. The secondary-member resin path 38 is open for free passage to above-mentioned resin path 10b. Level difference joint 26b is formed of the level difference of path section 26a of the tapering member 26, and path cutoff section 26c. 26d of resin cutoff member attaching holes is formed in the location which corresponds to the tapering member 26 with level difference joint 26b by the side of the inner circumference of the body of this. The resin cutoff member 28 of the shape of a wedge as shown in drawing 5 is attached in 26d of each resin cutoff member attaching hole, respectively. The resin cutoff member 28 is explained later. The principal member resin path 36 is formed of the path formation member 30-32, the cylinder part material 34, an above-mentioned multilayer ring assembly, etc. The principal member resin path 36 is open for free passage to above-mentioned die slit 20a in downstream 36a of this. The principal member extruder 52 is attached in the cylinder 10 so that it may be open for free passage to resin path 10c of this. The accumulator 50 for principal members can accumulate the principal member resin extruded by the principal member resin path 36 through resin path 10c from the principal member extruder 52. Piping 42 is connected to the cylinder 10 so that it may be open for free passage with resin path 10b of this. The secondary-member extruder 54 is connected to the edge of piping 42. As for the secondary-member extruder 54, the outlet side of this is connected to the accumulator 56 for secondary members through piping 42. The accumulator 56 for secondary members can accumulate the secondary-member resin extruded from the secondary-member extruder 54. The accumulator 56 for secondary members is connected with the piston rod of the hydrostatic pressure cylinder 58 through the piston rod of this. The hydrostatic pressure cylinder 58 can drive the accumulator 56 for secondary members to the secondary-member resin direction of extrusion of the method of drawing Nakashita. The shutoff valve 44 is formed in the downstream rather than the location where the accumulator 56 for secondary members was formed in piping 42. When a shutoff valve 44 locates the valve portion material to build in in an open position,

secondary-member resin is allowed for the downstream to extrude, but when this is located in a closed position, secondary-member resin can prevent that the downstream extrudes from this. Downstream 36a of the accumulator 50 for principal members to the principal member resin path 36 **** has come to pile up the principal member resin extruded in the shape of a cylinder toward the entrance side of die slit 20a with the secondary-member resin extruded by semicircle tubed toward the entrance side of die slit 20a through the half-annular secondary-member resin path 38 of piping 42, resin passage 10b, and a multilayer ring assembly from the accumulator 56 for secondary members. In order to make intelligible the configuration and arrangement condition of the resin cutoff member 28, the partial cross section which showed what rotated the cross section which met four to 4 in drawing 1 line 180 degrees to drawing 4 , and met five to 5 in drawing 4 line is shown in drawing 5 . The resin cutoff member 28 can prevent that secondary-member resin flows into the bore section by the side of the semicircle in which the secondary-member resin path 38 to the secondary-member resin path of a multilayer ring assembly is not formed (bore section of a part which has not given the gridline in drawing 2). It is possible to make distinct the boundary of the circumferencial direction of the secondary-member resin section of parison 48 and the principal member resin section so that this may mention later.

[0007] Next, an operation of this 1st example is explained. 10d of heat carrier paths of a cylinder 10 is made to circulate through the heat carrier of predetermined temperature beforehand. A cylinder 10 is maintained by this at constant temperature. The principal member resin extruded from the principal member extruder 52 is accumulated in the accumulator 50 for principal members through resin path 10c and the principal member resin path 36. Moreover, the secondary-member resin extruded from the secondary-member extruder 54 is accumulated in the accumulator 56 for secondary members. After are recording of both resin is completed, each piston of both the accumulators 50 and 56 is moved to the method of drawing Nakashita by driving the hydrostatic pressure cylinders 16 and 58, respectively. Principal member resin is extruded in the shape of a cylinder toward principal member resin path annular die slit 20a by this, and secondary-member resin is extruded by semicircle tubed toward die slit 20a through piping 42, resin path 10b, and the secondary-member resin path 38. Namely, it will be in the condition that semicircle tubed secondary-member resin put on the periphery side of cylinder-like principal member resin in the downstream of a multilayer ring assembly. For this reason, although the semicircle cylinder part of the side by which secondary-member resin is not extruded serves as space, while moving toward die slit 20a, this semicircle tubed space section will be filled up with the principal member resin by the side of inner circumference, and the same thick multilayer parison 48 will be extruded from die slit 20a over the perimeter as a whole. Parison 48 is put between the metal mold of the blow molding machine which is not illustrated, the upper part of this is cut by the cutter equipment which is not illustrated to mold closure and coincidence, air is blown into the parison 48 in metal mold, and a blow molding article as shown in drawing 6 is fabricated. The secondary-member resin part which the blow molding article gave the gridline of this had the semicircle of an outside surface covered as shown in drawing 7 . For example, when the semicircle part of a bottle-like blow molding article is exposed to an elevated temperature, the amount of the expensive heat resistant resin used can be lessened by using secondary-member resin as heat-resistant high resin.

[0008] Next, the 2nd example of this invention is shown in drawing 8 . In addition, the same sign is given to the same member as the thing of the 1st example. The path member 11 is attached in the cylinder 10 at the drawing Nakagami section of this. Resin path 10c is formed in the path member 11. The principal member extruder 52 is connected to the path member 11 at the drawing Nakamigi edge of this, and the hydrostatic pressure cylinder 13 is attached in the drawing Nakagami section of this. Extrusion opening of the principal member extruder 52 is open for free passage to resin path 10c. The rod 18 has penetrated the axial center of the path member 11. The piston of the hydrostatic pressure cylinder 13 is connected with the rod 18. The duplex cylinder member 15 is arranged at the periphery section by the side of path member 11 attachment of a cylinder 10. End side opening of the duplex cylinder member 15 is blocked by the lower limit side of the path member 11, and other end side opening is blocked by the step upper limit side of a cylinder 10. Although not illustrated, the input and the exhaust port which make a heat carrier flow and discharge are formed in the duplex cylinder member 15. The path formation member 30 is held through four bridge members 17 at the cylinder 10, as shown in drawing 9 . The path formation member 19 is

attached in the drawing Nakagami section of the path formation member 30. The above-mentioned rod 18 has penetrated the path formation member 19. In this 2nd example, the accumulator which accumulates principal member resin and secondary-member resin, respectively is not formed. The attaching position of the shaft orientations of this is positioned by putting the multilayer ring assembly which consists of the multilayer ring member 24 and the tapering member 26 between the bore upper part side step of a cylinder 10, and a ring 22. Other configurations are the same as that of the thing of the 1st example.

[0009] Next, an operation of this 2nd example is explained. In this 2nd example, the principal member resin extruded from the principal member extruder 52 will be extruded from the secondary-member resin which was continuously extruded by the principal member resin path 36 from resin path 10c of the path member 11, and was continuously extruded through resin path 10b from the secondary-member extruder 54, and piled-up back die slit 20a, without being accumulated in an accumulator. A cylinder 10 is adjusted by the heat carrier by which circulation supply of the temperature of this is carried out in the inside of the duplex cylinder member 15. Other operations are the same as that of the thing of the 1st example.

[0010] In addition, although path section 26a shall be formed in the tapering member 26, you may make it form the path section in the multilayer ring member 24 side in explanation of the 1st example of the above. In this case, what is necessary is just to attach the resin cutoff member 28 in the multilayer ring member 24. Moreover, in explanation of the 1st example of the above, although the multilayer ring member 24 and the tapering member 26 shall be arranged to shaft orientations, while forming these in the shape of [which does not have a taper side mutually] a ring, it can also arrange in the shape of a said alignment. Furthermore, in explanation of the 1st example of the above, although the secondary-member resin path 38 shall be constituted by the multilayer ring member 24 and the tapering member 26, a multilayer ring member and the tapering member 26 can also be formed in the shape of one by one member. In addition, in explanation of the 1st example of the above, although the secondary-member resin path 38 shall be formed over a semicircle periphery, section 26with stage c which intercepts resin can be prepared in two or more [on a periphery]. Thereby, extrusion molding of the secondary-member resin can be carried out from two or more subring-like sections. That is, secondary-member resin can be extruded in the shape of a stripe. Moreover, a secondary-member resin layer can also make the tapering member 26 the multilayer parison 48 formed over the perimeter by exchanging this for the thing of a configuration without section 26with stage c. Moreover, in explanation of the 1st and 2nd examples of the above, although parison 48 shall consist of two-layer [of the principal member layer by the side of inner circumference, and the secondary-member layer by the side of a periphery], it can also form a secondary-member layer in an inner circumference side while it forms a principal member layer in a periphery side, and can also make [more] the number of layers than this. Furthermore, when there is no possibility of the fluidity of the secondary-member resin to be used being low, and entering into a principal member resin side although the resin cutoff member 28 shall be attached in this while forming resin cutoff member attaching hole 26b in the tapering member 26, it can avoid forming the resin cutoff member 28 in explanation of the 1st example of the above.

[0011]

[Effect of the Invention] As explained above, according to this invention, extrusion molding of the multilayer parison by which a secondary-member layer is not formed in the request part on a periphery can be carried out according to an easy device. Therefore, the extrusion-molding equipment of multilayer parison can be made cheap, and the tuning of equipment becomes easy. Since a multilayer ring is furthermore only put on a cylinder, a multilayer ring can be exchanged easily and housekeeping substitute time amount of equipment can be shortened.

[Translation done.]

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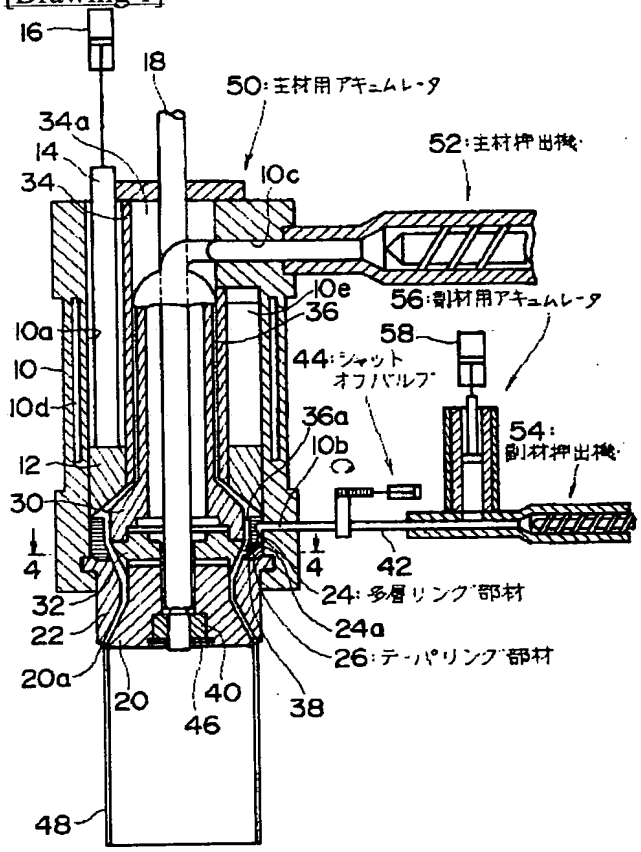
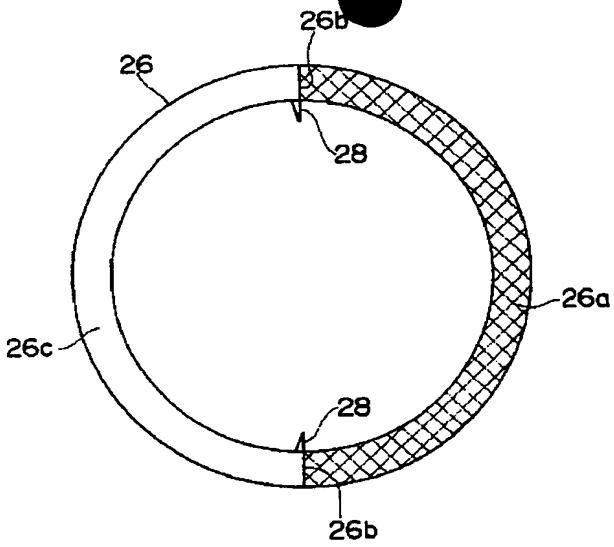
DRAWINGS

[Drawing 1]



[Drawing 2]



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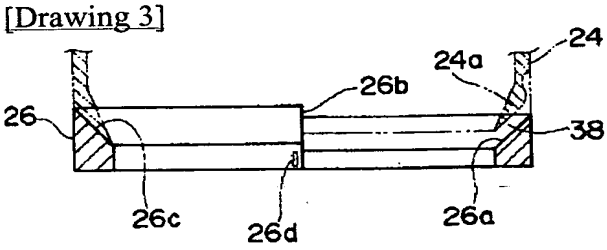

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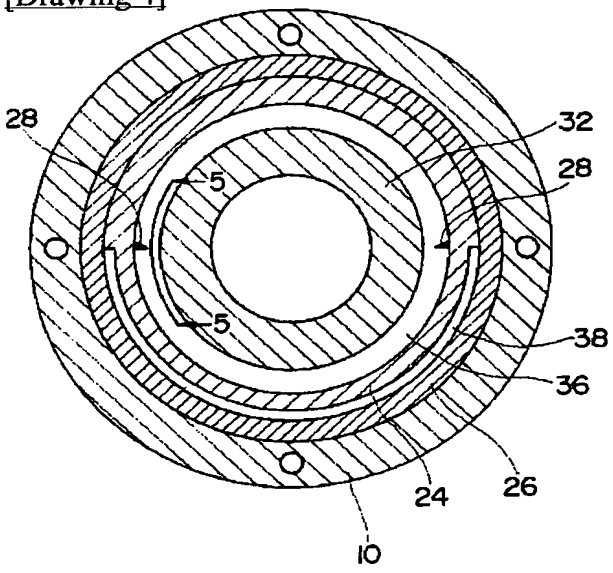

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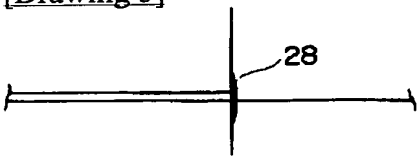

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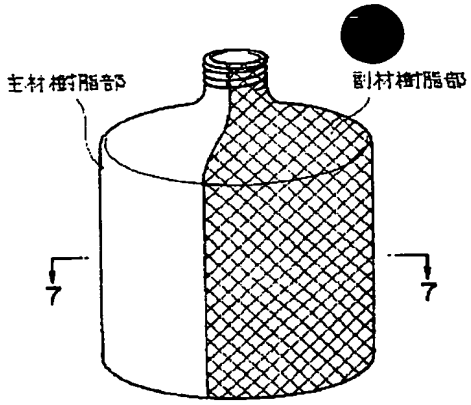

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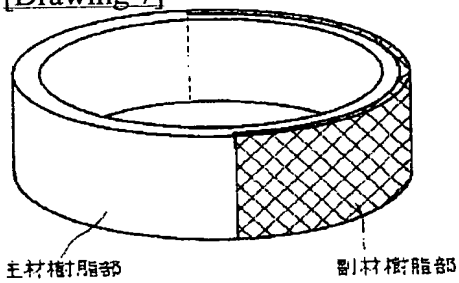
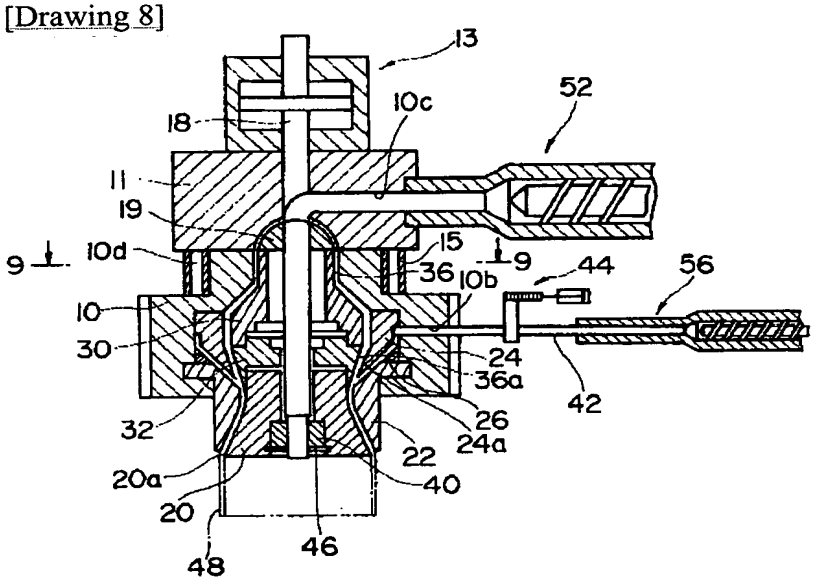
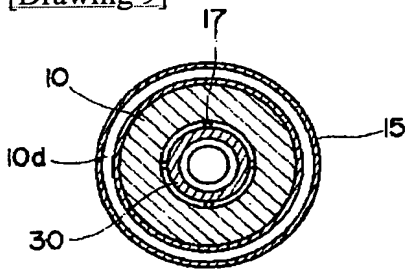


[Drawing 8]



[Drawing 9]



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